WESTERN BURROWING OWL RELOCATION PLAN

MARICOPA SUN SOLAR PROJECT,
KERN COUNTY, CALIFORNIA

March 2014

Quad Knopf

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Maricopa Sun Solar Project,
Kern County, California

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1.0 INTRODUCTION

Maricopa Sun, LLC (Project Administrator) is in the process of developing a solar complex (Maricopa Sun Solar Complex [Project]) in southern Kern County, California (Figure 1). The Project currently consists of seven Solar Sites that total 3,798.3 acres located within southwestern Kern County, California, approximately three miles northeast of the unincorporated community of Maricopa (Figure 2, Table 1). Activities associated with the Project include site preparation and grading, commercial operation, maintenance, and project decommissioning, all of which may put sensitive biological resources, including western burrowing owl (*Athene cunicularia*), at risk.

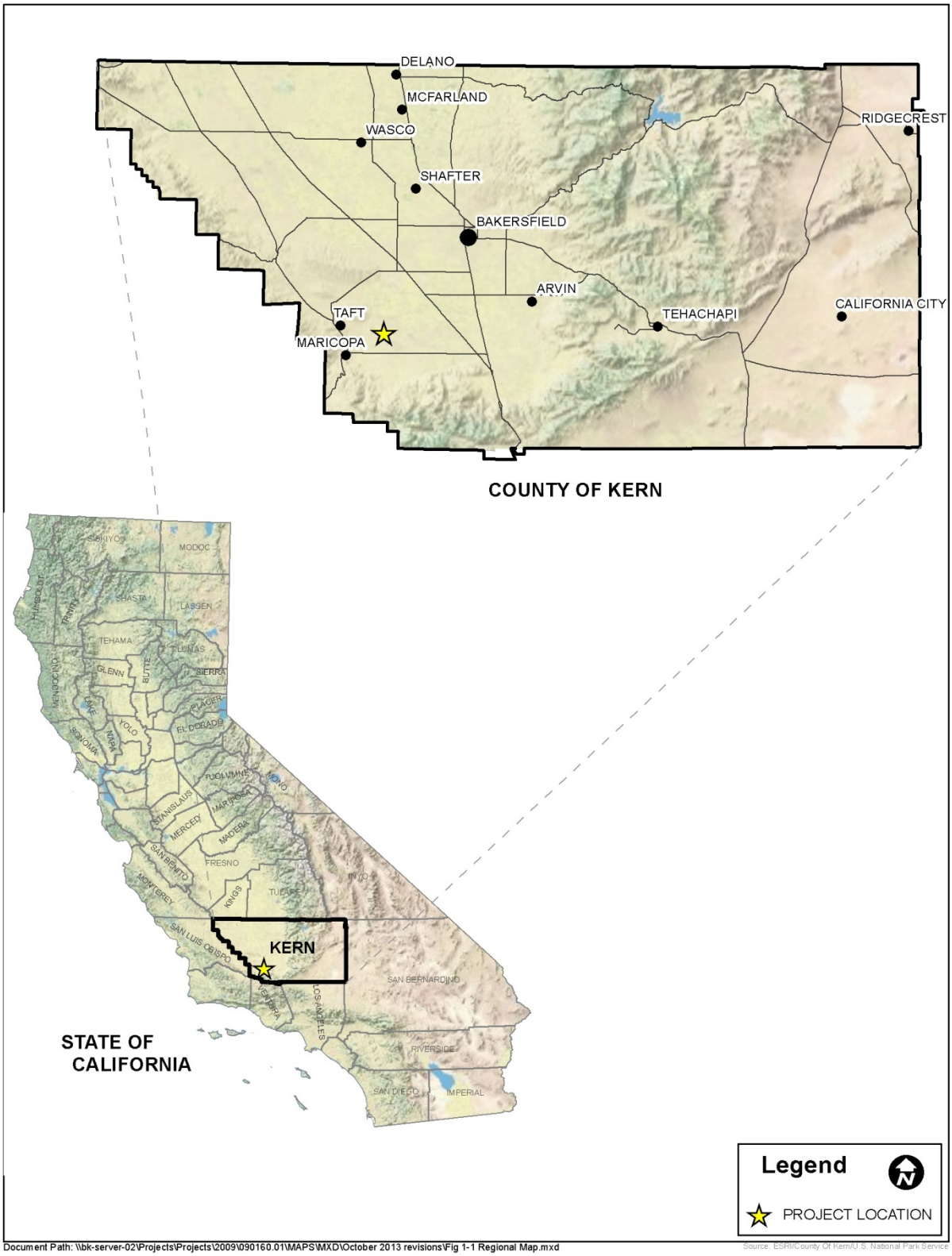
Table 1
Maricopa Sun Solar Complex: Solar Sites

Site Number	APN	Township, Range	Solar Sites (acres)
Site 2-S	220-120-(18-19)	T.32S., R.25E., Sec.21	628.8
Site 3-S	220-110-08	T.32S., R.25E., Sec.23	460.4
Site 4-S	295-040-(30-31)	T.32S., R.26E., Sec.19	652.5
Site 5-S	220-170-(01-02,05,07)	T.32S., R.25E., Sec.29 & 30	797.2
Site 6-S	220-130-01	T.32S., R.25E., Sec.27	304.2
Site 7-S	220-130-(02,12)	T.32S., R.25E., Sec.25&26	471.6
Site 15-S	295-130-25	T.32S., R.27E., Sec.33	483.6
	TOTAL		**3798.3**

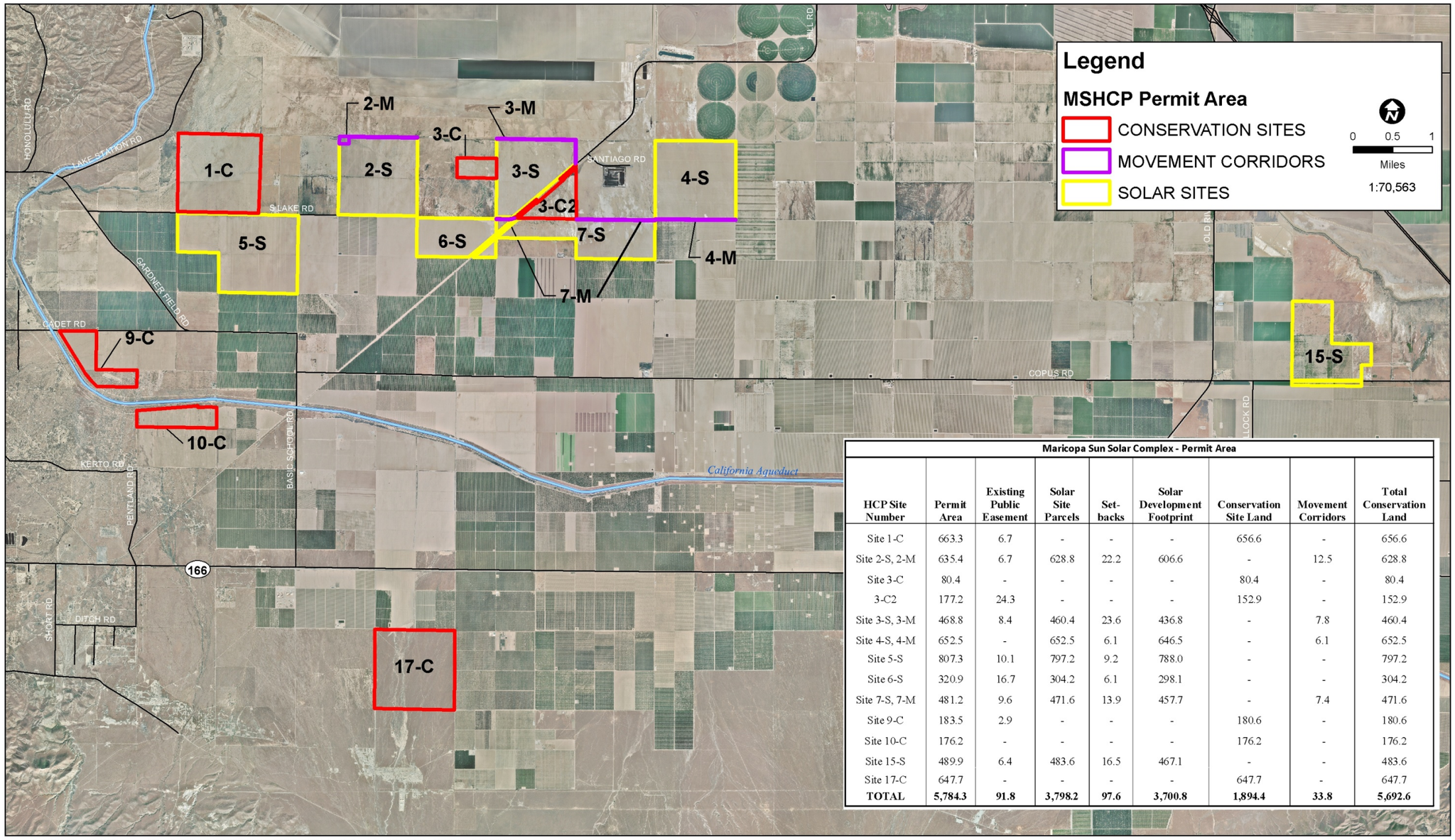
Although the Solar Sites have been repeatedly disked and contain minimal habitat value, the western burrowing owl is known to occur on at least some of them. No burrows of this species were found, but western burrowing owls were observed perching on the ground and likely use at least some of the Solar Sites for limited foraging. The western burrowing owl is common in the Project vicinity and burrows are located on lands adjacent to the Solar Sites. This species is at risk from the Project development.

The purpose of this relocation plan is two-fold: 1) to ensure that standard protection, avoidance and minimization measures will be implemented to avoid and reduce adverse effects of the Project to western burrowing owls; and 2) to establish standard guidelines for the relocation of western burrowing owls, should that become necessary.

The western burrowing owl is protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 and is designated as a Species of Special Concern by the California Department of Fish and Wildlife (CDFW). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR (Code of Federal Regulation) Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Sections 3503, 3503.5, and 3513 of the CDFW Code prohibit the take, possession, or destruction of birds, their nests or their eggs. To avoid violations of these federal and state regulations, provisions of these laws generally require that project-related disturbance at active nesting territories be reduced or eliminated during the nesting season, from February 1 to August 31. Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered "take," and is potentially punishable by fines and/or imprisonment. Individual burrowing owls are protected, regardless of season, in order to ensure that a viable breeding population of this owl species persists in the wild.



Quad Knopf	REGIONAL LOCATION OF MARICOPA SUN SOLAR COMPLEX PROJECT AREA, KERN COUNTY, CALIFORNIA	Figure 1



Maricopa Sun Solar Complex - Permit Area

HCP Site Number	Permit Area	Existing Public Easement	Solar Site Parcels	Set-backs	Solar Development Footprint	Conservation Site Land	Movement Corridors	Total Conservation Land
Site 1-C	663.3	6.7	-	-	-	656.6	-	656.6
Site 2-S, 2-M	635.4	6.7	628.8	22.2	606.6	-	12.5	628.8
Site 3-C	80.4	-	-	-	-	80.4	-	80.4
3-C2	177.2	24.3	-	-	-	152.9	-	152.9
Site 3-S, 3-M	468.8	8.4	460.4	23.6	436.8	-	7.8	460.4
Site 4-S, 4-M	652.5	-	652.5	6.1	646.5	-	6.1	652.5
Site 5-S	807.3	10.1	797.2	9.2	788.0	-	-	797.2
Site 6-S	320.9	16.7	304.2	6.1	298.1	-	-	304.2
Site 7-S, 7-M	481.2	9.6	471.6	13.9	457.7	-	7.4	471.6
Site 9-C	183.5	2.9	-	-	-	180.6	-	180.6
Site 10-C	176.2	-	-	-	-	176.2	-	176.2
Site 15-S	489.9	6.4	483.6	16.5	467.1	-	-	483.6
Site 17-C	647.7	-	-	-	-	647.7	-	647.7
TOTAL	**5,784.3**	**91.8**	**3,798.2**	**97.6**	**3,700.8**	**1,894.4**	**33.8**	**5,692.6**

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SITE PLAN
MARICOPA SUN SOLAR COMPLEX, KERN COUNTY, CALIFORNIA

Figure
2

To ensure protection of the burrowing owl, the standard protection measures provided in CDFW's October 17, 1995 *Staff Report on Burrowing Owl Mitigation* shall be implemented. Any relocation of western burrowing owls for the Project will meet the standards provided in this document.

2.0 METHODS

This section provides standard information on protection, avoidance, and minimization measures for western burrowing owl, site-specific mitigation measures, and information on relocation strategies.

Implementation of the measures provided below is intended to minimize the adverse effects of the Project to burrowing owls and the resources that support viable owl populations. These measures are adopted from standard guidelines published by the CDFW (CDFG 1995), which are intended to provide a decision-making process that should be implemented whenever there is the potential for an action or project to adversely affect burrowing owls or their resources. Project site-specific surveys have been completed and western burrowing owls are known to occur on some of the Solar Sites, and they could be present on any of the Solar Sites prior to initiation of construction activities. Full winter and summer surveys following CDFW guidelines (CDFG 1995) are not warranted because the presence of burrowing owls has been established. However, pre-construction surveys will be implemented prior to construction, repairs and maintenance that requires ground disturbance, and prior to decommissioning activities. The standards for these surveys and other related measures are presented below.

2.1 Pre-construction Avoidance Survey

Prior to ground disturbing activities, a qualified biologist will conduct pre-construction surveys for western burrowing owls over the entire Project activity area and a 500-foot (approx. 150 meters) buffer. Pedestrian surveys will be conducted and transects will be spaced to provide 100 percent visual coverage of the Project area. Transects will be spaces approximately 100 feet (30 meters) apart unless variation in the terrain requires shorter distances to accomplish 100 percent visual coverage. The surveys will be conducted no more than 14 days prior to ground disturbing activities. If more than 14 days lapse between the time of the pre-construction survey and the start of ground-disturbing activities, another pre-construction survey must be completed. Pre-construction surveys will be completed prior to the initiation of the initial solar site development, ground disturbing repairs and maintenance, and decommissioning.

2.2 Adverse Effects to Burrowing Owls, Avoidance, and Buffer Zones

When pre-construction surveys confirm the presence of western burrowing owls, the mitigation measures described below will be followed to minimize adverse effects to burrowing owls, their burrows and foraging habitat on the site. Adverse effects are defined as:

- Activities occurring within 160 feet (approx. 50 meters) of occupied burrows are considered disturbance or harassment;

- The destruction of actively used natural or artificial burrows, such as culverts, concrete slabs, and debris piles that provide shelter to burrowing owls is considered an adverse effect, and the removal of these features will trigger replacement of same at standard ratios; and

- The destruction or degradation of foraging habitat adjacent to occupied burrows is considered an adverse effect and compensation for the loss of this habitat will be provided at standard ratios.

Whenever possible, burrowing owls and their habitat will be protected in place by the use of buffer zones, visual screens, or other measures while project activities are occurring in order to minimize disturbance. As a general guideline for establishing buffers, 160-foot (approx. 50 meter) buffers will be implemented during the non-breeding season (September 1 through January 31), and 250-foot (approx. 75 meter) buffers will be implemented during the breeding season (February 1 through August 31), but these may be adjusted by a qualified biologist to address site-specific conditions. Adjustments to these buffer areas must not lead to abandonment of nests, disruption to breeding activities (e.g., nesting, rearing or feeding of young), or temporary or permanent abandonment of a burrow site.

2.3 General Burrowing Owl Protective Measures

To ensure the protection of western burrowing owls, the following project-related measures will be implemented:

- Before work may begin within areas where burrowing owls are known to occur, the contractor's personnel must receive Employee Education Program (EEP) training, which will be presented by a qualified biologist. A record of each employee completing training will be maintained on site by the contractor. No personnel may begin work on site, including delivery of materials and mobilization, until the personnel have received this training. All contractor personnel, having completed the EEP training, will be responsible for identifying any species in harm's way within the project limits and stopping work in the immediate area, should the need arise;

- On-site personnel will comply with directions from qualified biologists, whose role is to help on-site personnel with compliance guidelines and environmental laws. Biologists may need to complete certain tasks during construction activities, and while they will not attempt to slow construction, some activities may necessitate this in order for biologists to fulfill their responsibilities. Biologists have the authority to temporarily halt construction activities that could harm sensitive biological resources, including nests and burrows. Such direction, when provided by the biologist, will not be the basis for a claim by the contractor;

- The qualified biologist will be available for on-call responses to site situations through the duration of on-site construction activities;

- For each day the biologist is in the field or required for on-call activities, s/he will complete a daily log that documents the date, time, and weather conditions on site, biological monitoring activities, species observations, protective mitigation measures implemented, and any other pertinent biological data. A copy of the daily log will be incorporated into reports as required by the MSHCP;

- Areas flagged, fenced, or otherwise identified as environmentally sensitive are to be avoided. Under no circumstances is travel, equipment, or earth moving permitted in these areas;

- No burrowing owl or active migratory bird nests may be touched. If a burrowing owl or active bird nest is observed, it must be reported immediately to the designated on-call biologist;

- If a burrowing owl or bird nest is harmed or animal killed, accidental or otherwise, the USFWS and the CDFW will be notified immediately. Additionally, the incident must be reported immediately to the lead biologist. Full details of the circumstances of the death or injury will be provided within 24 hours of incident. Contacts for these reporting requirements are:

    - CDFW, Region IV office, 1234 W. Shaw Ave. Fresno, California, 93657, (559) 243-4014; and
    - USFWS, 2800 Cottage Way, Room W-2605, Sacramento, California, 95825, (916) 414-6600.

2.4 Site-Specific Protection Measures

BURROWING OWLS PRESENT DURING THE NON-BREEDING SEASON

During the non-breeding season (September 1 through January 31), no disturbance should occur within 160 feet (50 meters) of burrows occupied by the western burrowing owl. This area will be marked as an Environmentally Sensitive Area (ESA) as described below, and will remain in place while construction activities or repairs are being made in the vicinity (within 500 feet of the ESA).

The integrity of the ESA fencing will be maintained by performing an inspection of the fence twice weekly, and implementing any needed repairs within one day of discovery. For the fencing to be considered in suitable condition, it must exhibit the following:

- All t-posts that mark the boundary of the ESA area must be in an upright condition and spaced at approximately 30-foot intervals. All downed posts must be reset;

- The top of the posts must be secured together with rope that is stretched tight between the posts. The rope must not sag to the point of touching the ground, and efforts should be made to keep the height of the rope no lower than three feet from ground level; and

- Survey flagging will be tied to each post and on the rope, mid-way between the posts to ensure that flagging is maintained at intervals of approximately 15 feet around the perimeter of the ESA.

The protected area will be avoided by all construction and ground clearing activities until the burrowing owl has vacated the burrow of its own accord. If an earlier evaluation is necessary, the conditions for removal of the exclusion area and burrow will remain in effect (i.e., prior to removal of the exclusion area and excavation of the burrow, a qualified biologist will inspect the burrow, ensuring that the owl has not been present at the burrow for a minimum of three consecutive days).

BURROWING OWLS PRESENT DURING THE BREEDING SEASON

Occupied burrows should not be disturbed during the nesting season, from February 1 through August 31, unless a qualified biologist verifies that the birds have not begun egg-laying and incubation, or that the juveniles from those burrows are foraging independently and are capable of independent survival.

If western burrowing owls on the construction site or within 500 feet (150 meters) of the construction site appear to be engaged in nesting behavior, occupied burrows should not be disturbed and will be fenced with a 250-foot avoidance area buffer. The avoidance area will be designated as an ESA and be marked with high-visibility flagging every 15 feet. The ESA fencing will be erected between the nest site or active burrow and any earth-moving activity or other disturbance. The Developer may not enter an ESA established around an active bird nest or burrow. The ESA may be removed once it is determined by the Monitoring Biologist that the young have fledged, are foraging independently, and are capable of independent survival.

The integrity of the ESA fencing will be maintained by performing an inspection of the fence twice weekly, and implementing any needed repairs within one day of discovery. For the fencing to be considered in suitable condition, it must exhibit the following:

- All t-posts that mark the boundary of the ESA area must be in an upright condition and spaced at approximately 30-foot intervals. All downed posts must be reset;

- The top of the posts must be secured together with rope that is stretched tight between the posts. The rope must not sag to the point of touching the ground, and efforts should be made to keep the height of the rope no lower than three feet from ground level; and

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The protected area will be avoided by all construction and ground clearing activities until the burrowing owl has vacated the burrow of its own accord. Prior to removal of the ESA and

excavation of the burrow, a qualified biologist will inspect the burrow to ensure that the owl has not been present at the burrow for a minimum of three consecutive days.

WESTERN BURROWING OWL RELOCATION STANDARDS

Relocation of burrowing owls will not occur during the breeding season (February 1 through August 31), and will only be accomplished during the non-breeding season (September 1 through January 31). The relocation of burrowing owls may be conducted during the breeding season if a qualified biologist verifies that the birds have not begun egg-laying and incubation, or that the juveniles from those burrows are foraging independently and are capable of independent survival.

If burrowing owls must be moved away from the disturbance area, passive relocation techniques should be used rather than trapping. Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are beyond 160 feet from the impact zone, and that are within or contiguous to a minimum of 6.5 acres of foraging habitat for each pair of relocated owls. Passive relocation may not commence until October 1 and must be completed by February 1 (except as otherwise noted above). Two or more weeks may be needed to accomplish passive relocation and allow the owls to acclimate to the alternate burrows. Passive relocation may only be conducted by a qualified biologist or ornithologist. After passive relocation has occurred, the area where owls were originally located and its immediate vicinity (500 feet) will be monitored by a qualified biologist daily for one week and once per week for an additional two weeks to document that owls are not reoccupying the site. Passive relocation of burrowing owls may be accomplished with or without the use of a one-way door system. If these methods fail, active relocation may be used.

Passive Relocation using One-Way Doors: Owls may be excluded from burrows that are located within an impact zone or within 160 feet of an impact zone by installing one-way doors on burrow entrances. One-way doors should be left in place 48 hours to ensure owls have left the burrow before the burrow is excavated. The impact area should be monitored daily for one week to confirm owl use of the site has ceased prior to excavating burrows. Burrows will be excavated using hand tools and will be backfilled to prevent owls from reoccupying them. Sections of flexible plastic pipe or burlap bags should be inserted into the tunnels during excavation to maintain an escape route for any animals that may be inside the burrow. Artificial burrows will be created and installed at a ratio of 1:1 in adjacent suitable habitat that is contiguous with the foraging habitat of the affected owls. Each pair of owls (or a single owl) that has been so displaced will be provided with 6.5 acres of foraging habitat at the relocation site.

Passive Relocation without One-Way Doors: Although there is a possibility that there will be instances where passive relocation without one-way doors might be appropriate for this project, in most cases, this method is not feasible. Passive relocation without one-way doors requires the installation of artificial burrows or the presence of alternate natural burrows within a 6.5-acre area of the location from which owls would need to be excluded. The expectation would then be that owls would voluntarily move to the newly created burrows and thus vacate the site of Project activities and eliminate the need for other, more invasive, relocation techniques. Given the large scale of the Solar Sites, it is not likely that this amount of protected acreage would

occur near any burrowing owl location. To implement this method, the project area would be monitored daily until the owls have relocated to the new burrows. The formerly occupied burrows would then be excavated. Burrows would be removed using hand tools and backfilled to prevent reoccupation. Sections of flexible plastic pipe would be inserted into burrows during excavation to maintain an escape route for any animals inside the burrow. Artificial burrows would be created and installed in a ratio of 1:1 in adjacent suitable habitat that is contiguous with the foraging habitat of the affected owls.

To ensure proper installation of artificial burrows, the *User's Guide to Installation of Artificial Burrows for Burrowing Owls* (Johnson et al. 2010) will be followed.

3.0 CONCLUSION

The techniques described will be implemented as needed during the construction, operations and maintenance, and decommissioning phases of the Project. Implementation of the described protection measures and relocation standards for western burrowing owls will reduce project-related adverse effects to western burrowing owls that currently occupy the Solar Site and/or adjacent habitat. These measures will also reduce adverse effects to burrowing owls that may become established on the Solar Site once solar facilities have been installed. Conducting pre-construction surveys, avoiding burrowing owls whenever possible; and passively or actively removing burrowing owls from construction areas when necessary, then releasing them into artificial burrows within designated Conservation Sites will reduce adverse effects of the Project to this species.

4.0 REFERENCES

California Department of Fish and Game. October 17, 1995. Staff Report on Burrowing Owl Mitigation.

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The California Burrowing Owl Consortium. April 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines. Tech. Rep. Burrowing Owl Consortium, Alviso, California.